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Some typographical errors are not corrected in the errata, this is probably due to the fact that the printing was done mostly during the summer while the author was in the field, while a large amount of proof was sent to Mexico and there lost.

The present volume is divided into two parts, Part I relating to the Puerco, Wasatch and Bridger faunæ (Eocene); and Part II comprising the White River and John Day faunæ, Lower and Middle Miocene. Vol. IV is in preparation and will comprise the Upper Miocene fauna (Ticholeptus and Loup Fork fauna) and the Pliocene.

The introduction is divided into two sections, in the first of which the character and distributions of the Tertiary formations of the central region of the United States are noticed. In the second section are discussed the horizontal relations of the North American Tertiaries with those of Europe.

Then follow the description of the fossils, beginning with the fishes and ending with the mammals.

The general conclusions as to affinities and phylogeny are appearing in the NATURALIST in a series of articles which began two years ago.

The work is richly illustrated, the details amply supplementing the descriptions. As the result of extended investigations by an experienced comparative anatomist and morphologist, as well as palæontologist, this and the preceding volumes mark an epoch in American palæontology. It is a monument of energy and devotion to science, signalizing the triumphs of severe and trying physical labor in the field, as well as patient, comprehensive and searching work in the laboratory and study.

CLAUS' ELEMENTARY TEXT-BOOK OF ZOOLOGY.[1] — The larger work of Professor Claus is the latest and most authoritative treatise on systematic zoölogy, having passed through four editions. This work, somewhat cut down in size, is the original of the present one. As it is, the first part is a bulky octavo, and, as when completed it will be in two volumes, the book will not be so easy of reference as if it formed a single volume. The book in its English dress is richly illustrated, the cuts, for the most part, carefully prepared, mostly selected by Dr. Claus himself. To the general part are devoted 179 pages; the usual subjects of organic and inorganic bodies, animals and plants, cells and tissues, correlation of organs, accounts of the different organs, intelligence and instinct, development and evolution receiving full and accurate treatment, though the author's style is at times heavy and prolix, the translators not always adding perspicuity or elegance to the cumbrous German expressions. For example, on

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[1] *Elementary Text-book of Zoölogy.* General part and special part: Protozoa to Insecta. By Dr. C. CLAUS. Translated and edited by ADAM SEDGWICK, with the assistance of F. G. HEATHCOTE. With 706 woodcuts. London, W. Swan Sonnenschein & Co., Paternoster square, 1884. 8vo, pp. 615.

p. 1 the ordinary student will stand aghast at the following sentence: "The matter of unorganized bodies (for instance of crystals) is in a state of stable equilibrium, while through the organized being a stream of matter takes place." Do not streams generally flow? The punctuation is also defective, and cases of tautology occur. Why at this date there should be any distinction, even if in words, expressed between sarcode and protoplasm we do not understand. On p. 21 we find the following sentences in the section on the difference between animals and plants: "In the place of muscles, which as a special tissue are absent in the lower animals, there is present an undifferentiated albuminous substance known as sarcode, the contractile matrix of the body. The viscous contents of vegetable cells, known as protoplasm, possesses likewise the power of contractility, and resembles sarcode in its most essential properties." There is vegetable and animal protoplasm, but why give different names to what is fundamentally the same substance? Throughout the succeeding pages the word protoplasm is used for the contents of animal cells, and we read no more of sarcode.

The translator has, on p. 70, referred to the "spiral thread" of an insect's trachea, sufficient liberty might have been taken with the original to have given the latest and most correct view as to the structure of the trachea and the mode of tracheal respiration, as worked out by Professor Macloskie; although it should be stated that his paper did not appear until May last (see this journal, XVIII, p. 567). The statement concerning and figures of the nervous system of the Echinoderms might have been modernized and made more complete in the light of the discoveries of the two Carpenters, Marshall and Jickeli. There is otherwise but slight occasion for fault-finding, as Claus is evidently a sound, cautious compiler, and we should expect any slight inaccuracies to have been corrected by the able translator.

Passing to the systematic part, under the Protozoa we notice that Bathybius is mentioned, though with doubt, while no reference whatever is made of Eozoön. As an appendix to the Protozoa is a section devoted to the Schizomycetidæ, "which approach more nearly to the Fungi," and with them are treated the Gregarinidæ. The sponges are associated with the Cœlenterates, a view not, we think, either true or conducive to clearness.

The second subgroup of Cœlenterates proper (the sponges forming subgroup 1) are called Cnidaria, and for Hydrozoa we find substituted the term Polypomedusæ; it should also be mentioned that the Anthozoa are placed lower than the Hydrozoa. Balanoglossus, the representative of the class Enteropneusta, is placed between the Echinoderms and worms.

We wish a figure of the adult of the singular worm Polygordius had been given, though a good sketch of its larva appears, but the excellence of the majority of the figures and the judgment shown in their selection are almost beyond criticism. Why the Gephyrea and the Hirudinea are placed above the more highly specialized Chætopod worms we do not understand. As also why the Phyllopods should be placed at the base of the Crustacea, below the Copepoda and barnacles. This classification has been strenuously advocated by Claus, but not, we suppose, generally accepted; the reasons militating against this view are many and urgent; the Branchipodidæ, with their stalked eyes and highly specialized bodies, appear to stand nearer the stalked-eyed Crustacea than any other Entomostraca; and to go directly from the root-barnacles to the Malacostraca is straining more than one point in taxonomy. In treating the trilobites no reference whatever is made to American work, especially that of Walcott, who has demonstrated that they had hard jointed limbs; Claus states the obsolete view that they were "soft and delicate."

Among the Myriopods Pauropus is assigned to the Polydesmidæ, when it certainly represents a distinct suborder if not order. The Physopoda or Thrips are regarded as a tribe of Pseudo-neuroptera, although embryology shows they are Hemiptera. The taxonomy of the Lepidoptera seems to us to be very objectionable and old-fashioned, while it is a comfort to see that the Hymenoptera are placed at the head of the insect series. We shall look with great interest to the appearance of the second, closing volume.

GOODALE'S PHYSIOLOGICAL BOTANY.[1]— In the year 1879 Dr. Gray brought out the new (sixth) edition of his widely known and used Botanical Text-book. The new book covered much less ground than the older editions, being confined to the structural botany of the phanerogams. It was then announced that Dr. Goodale was to prepare a second volume to be devoted to physiological botany, Dr. Farlow a third devoted to cryptogamic botany, and that the series was to be completed by a fourth volume to include a sketch of the natural orders of phanerogams. After waiting six years we have the pleasure of perusing advance sheets of the long-promised Vol. II. The part before us is devoted to the histology of the phanerogams, and is soon to be followed by Part II, which is to deal with vegetable physiology.

Upon opening the book we have first an interesting chapter devoted to histological appliances; a most useful chapter indeed it will prove to all workers in the botanical laboratory. In this we observe with pleasure the remark that "other things being equal, a microscope with a short tube and with a low stand will be most convenient on account of the large number of cases in which

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[1] *Gray's Botanical Text-book* (sixth edition). Vol. II. Physiological botany. I. Outlines of the histology of phænogamous plants. By GEORGE LINCOLN GOODALE, A.M., M.D., professor of botany in Harvard University. Ivison, Blakeman, Taylor & Co., New York and Chicago. 1885. pp. vii, 194, 12mo, 141 figures.